

① Geology - the study of the Earth (⊕) and the processes that shape it.

② Reasons to study Geology:

- interest in the world around you
- understand / predict hazardous events
- learn how to find resources

Draws from many other sciences

- phys, chem, bio, math, geog, astr.
- but it is distinctive in that it focusses all these approaches on the study of ⊕

Special Complexities when studying ⊕

- time and scale
 - processes very slow on human scale
 - systems too large to duplicate in lab
- complexity in natural systems
 - impurities, types mixed, T/P changes
 - rocks all changed many times.

Scientific Method

observe
hypothesis
prediction
experiment
to test hypoth.

diff for geol

} same
difficult to experiment,
just do more observing.

© Uniformitarianism

- James Hutton - continuous / gradual
- "the present is the key to the past"
- by studying processes now, we can understand what \oplus was like in the past. (not nec. at the same rate)
 - ie. coral lives in sea now, so it did in past too.
 - ie. similar body parts today probably had same function in past
- the past was different though
 - \oplus was hotter \rightarrow more plate tect.
 - atm had less $O_2 \rightarrow$ diff erosion rates

Catastrophism

- George Cuvier
- series of immense, worldwide upheavals are agents of change and \oplus is static between.

We believe in a combination of uniformitarianism with some catastrophes thrown in.
ie. plates gradually/continuously move, but stuck along edges leading to catastrophic \oplus quakes.

Dynamic Equilibrium

- as internal forces push up, gravity and erosion pull/tear down.

④ ⊕ is a Closed System

- the amount of matter on ⊕ is fixed
- we could run out of resources or space
- we keep our pollution and garbage
- important to learn about ⊕ so we can take care of it properly!

⑤ How it all began

Big Bang - 14 billion years ago, everything was crammed into the size of a pinhead, then it rapidly expanded; still expanding today
universe →
= formation of our universe

Nebular Theory - cloud of dust and gas, rotating, started to collapse, formed sun at centre and the rest became planets in orbit
solar system →

- high T materials condensed closer to sun
- low T materials (gasses on ⊕) were blown out by solar energy to form the outer planets (gas giants)

⊕ was a molten ball initially until it cooled. Would be completely cooled now except for radioactive materials inside keeping us hot.

Workbook Questions # 1, 2, 6-16, 19